

542,158

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number  
**WO 2005/045162 A1**

(51) International Patent Classification<sup>7</sup>: **E04H 04/16**,  
B08B 01/00

(21) International Application Number:  
PCT/US2004/037148

(22) International Filing Date:  
4 November 2004 (04.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/517,352 4 November 2003 (04.11.2003) US

(71) Applicant (for all designated States except US): **AQUA  
PRODUCTS, INC.** [US/US]; 280 Grove Avenue, Cedar  
Grove, NJ 07009 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ERLICH, Giora**  
[US/US]; 1 Vale Place, North Caldwell, NJ 07006 (US).  
**HORVATH, Tibor** [US/US]; 6 Hemlock Terrace, Spring-  
field, NJ 07081 (US).

(74) Agent: **SPATH, Thomas, E.**; Abelman, Frayne &  
Schwab, 150 East 42nd Street, New York, NY 10017-5612  
(US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

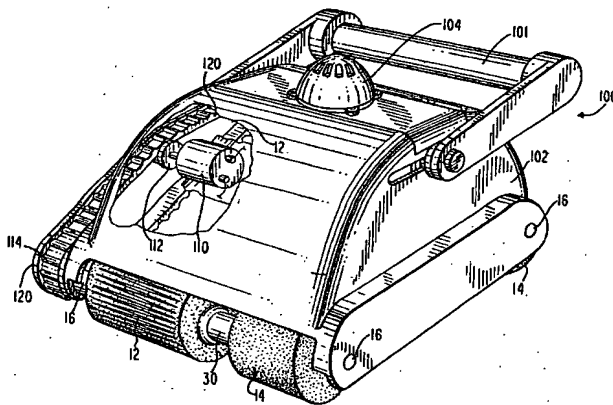
(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,  
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

[Continued on next page]

(54) Title: **DIRECTIONAL CONTROL FOR DUAL BRUSH ROBOTIC POOL CLEANERS**



(57) Abstract: A self-propelled robotic pool cleaner (100) has a first pair of driven brushes (12, 14) and second pair of free brushes co-axially mounted for rotation on axles (16) at the opposite ends of the pool cleaner that are transverse to the direction of movement. The first pair of brushes are mounted on one side and are driven by a drive motor (110); the second pair of brushes are mounted on the opposite side of the cleaner. A rotational delay clutch (30) is co-axially positioned between each pair of the first and second brushes so that reversing the drive motor causes the first pair of driven brushes to temporarily rotate at an angular rotational velocity that is greater than that of the second pair of brushes, thereby pivoting the pool cleaner through a predetermined angular change in direction before the synchronous rotation of the second pair of dual brushes is initiated by the engagement of the clutch. Following each reversal, the pool cleaner moves in a new direction along a generally straight path that is angularly displaced from its prior path. A highly efficient cleaning program permits the use of a battery to power the drive and water pump motors in pool cleaners that ascend the side walls as well as cleaning the bottom surface.

WO 2005/045162 A1



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*